

Subject Code: 1ET4030602	Subject Title: ELECTRIFICATION OF BUILDING COMPLEXES
Pre-Requisite	--

RATIONALE:

With the revolutionary changes in the building construction, advent of new building materials and electrical fittings and accessories there is an increase in demand for specialists in electrification of high rise-multistoried building and commercial complexes. Therefore a limited exposure to electrification of small building is not sufficient and this subject needs to be taught as a specialized subject. This course will provide knowledge about electrification of high rise buildings and complexes. Studying this course will enable the diploma pass outs to plan, design, and estimate and execute the electrification of multistoried buildings and commercial complexes independently and professionally as per IE rules. If proper skills are developed then pass outs may start their own business of electrification of building complexes, which is very profitable and growing business and requires very less investment.

COURSE OBJECTIVE:

1. Understand about the Wiring systems & Different Testing on Installed wiring
2. Understand about the Illumination required in commercial & High-rise buildings
3. Understand about How to calculate Load /Sub circuit/Main switch/ Cable for High-rise complexes.
4. Understand about Special Electrical Requirements in Hotels/Theaters/Mall etc..
5. Understand about Blueprint/S.O.R.
6. Comparison of Residential & Commercial Installations
7. Understand about Service connections & I.E. rules
8. Understand about Bus bar/ Bus chamber/ Distribution system.
10. Use of Safety devices ELCB, MCB, Firealarm, Smokedetection systems etc..
11. Inspection report/ D.G.set for standby/Digital meters.

TEACHING AND EVALUATION SCHEME:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)			
Lecture	Tutorial	Practical	Credit	Theory		Practical	
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment
04	00	02	05	60	40	20	30

DETAILS OF COURSE CONTENTS:

Sr. No	Topic and Subtopic	Total Hours	Weightage %
1	Elements of Electrification Elements of Electrical installation, Reading and Interpretation of Electrical Engineering Drawings, diagrams, plans and layout. Testing of wiring Installation for verification of current, earthing resistance, insulation resistance and continuity as per IS Preparation of testing/supervisory report, Selection of electrical accessories such as main cable, main switches circuit breakers etc, Illumination requirements in high rise, Commercial and public Building ,Economical illumination design	08	12
2	Electrification of Multistoried Buildings Wiring layout of an electrical installation, Type of wiring- Concealed /Surface conduit etc, Calculate number of sub circuits from the total circuit requirement, Calculation total electrical load on distribution work, Floor wise estimation of material requirements, Specification of wiring material and accessories, Estimation of total cost of electrification using schedule of rates (SOR),. Case Studies Requirements of approval from electrical inspection for high rise-multistoried building, Load calculation for lifts, escalators, air conditioners: wiring diagram, Case studies(Problems)	14	25
3	Electrification of Commercial Complexes and Public Buildings Interpret Installation drawing and layout of electrical wiring of a commercial complex, Differentiate between electrification of Residential and commercial Installation, Calculate Load specification for service connection and nature of supply. Calculate the correct size of cables, bus bar and bus bar chamber, Select appropriate mounting arrangements and positioning of switchboards, distribution boards, main switch, type of wire and wiring system, Estimating and Costing of material	14	26

	and total cost of electrification of commercial complexes and Public buildings Special requirements of hotels, theaters, library and cultural halls etc. from electrification points of view		
4	Distribution System for Multistoried Buildings Different Methods of service connection, Incoming supply to substation for multistoried high rise buildings (building height more than 15m.) Distribution panels and bus bar system, Meter connection-bifurcation of metering-meters as per consumers demand, use of digital – meters for prevention of theft of power, Cable laying in building, special precautions, Estimating and costing of electrification of underground service connection of multistoried building.	12	25
5	Electrical Safety and IE Rules Importance of safety rules, Safety precaution in electrical installation of multistoried buildings, Fire alarm system, Smoke detection system, Safety for lifts and escalators, Earthing system (IE rules regarding safety), Lightning arrestors arrangements, Use of ELCB and MCB in an installation, Electronic safety locks at the entrance ,Use of National Building Code	08	12

COURSE OUTCOME:

After successful completion of the course, student will be able to

- Know about Types of test methods after electrification
- Know about Illumination concept and calculation for requirement of fixtures
- Know about special requirements for electrification in mall, theatre, hospital, Hotels
- Know about safety equipments (ELCB, MCB, Fire alarm, Smoke detector) etc.
- Understand about the S.OR, Blue prints, Inspection report, Digital meter

LIST OF PRACTICAL:

SR NO	PRACTICALS/EXPERIMENTS
1	Design Economical Illumination System for any Complex Building
2	Draw a complete wiring diagram, of any one of the commercial complexes. (Cinema, hotel, library, cultural hall, hospital etc. A group of 5 students, having one different complex –per group. (Prepare sheet)

3	Calculate Load for lift, escalators, air conditioning in high rise building.
4	Interpret and prepare electrical test report of a large building or complex.
5	Calculate load, draw wiring diagram, with specification of Hostel building of Polytechnic as per given plan.
6	Testing of safety Devices in electrical installation in a high rise building.
7	Calculate load, draw wiring diagram, with specification of Laboratory of Machine of the institute.
8	To Study about electrical test for commercial & high rise building as per I.E.
9	Prepare field visit report (Important observations) of any high-rise building or Complex for electrical installation and wiring.

LIST OF REFERENCES:

Sr No.	Title of Book	Author	Publication
1	Electrical Design, estimating & Costing	Raina, K. B. and Bhattacharya, S.K.	New Age International (p) Limited, New Delhi
2	Electrical Estimating & costing	Uppal, S L	New Age International (p) Limited, New Delhi
3	Electrical Installation Estimating & Costing	Gupta, J.B.	S. K. Kataria & Sons, New Delhi
4	I.E. rules for wiring, Electricity supply act-1948	Bureau of Indian Standards	Electricity supply act-1948